

## REMARKS

Applicants appreciate the thorough examination of the present application that is reflected in the Official Action of November 14, 2003. Applicants also appreciate the Examiner's indication that Claims 90, 91, 98, 99, 106 and 107 would be allowable if rewritten in independent form, including all of the limitations of the base claim and any intervening claims. Claims 90, 91, 98, 99, 106 and 107 now have been rewritten in independent form as new Claims 111-116, respectively. Applicants also respectfully submit, however, that amended Claims 75-77 and 90-110 are patentable over U.S. Patent 6,529,385 to Brady et al. for the reasons that will be described below.

### **The Brief Description of the Drawings Has Been Amended**

The "Brief Description of the Drawings" section of the present application has been amended to provide a separate brief drawing description of each figure. This amendment does not add new matter and does not affect the scope of the claims.

### **Independent Claims 75, 95 and 103 Are Patentable Over Brady et al.**

Independent Claims 75, 95 and 103 were rejected under 35 USC §102(e) as being anticipated by Brady et al. However, Applicants respectfully submit that these claims as amended are patentable over Brady et al. for the reasons that now will be described.

In particular, amended Claim 75 recites:

75. An electrical connector comprising:  
a first mating connector substrate including a first mating connector face;  
a first array of inductors on the first mating connector face;  
a second mating connector substrate including a second mating connector face; and  
a second array of inductors on the second mating connector face;  
the first and second mating connector substrates being configured to maintain the first and second mating connector faces in closely spaced apart relation, to prevent DC coupling and provide inductive AC coupling, between at least one pair of corresponding inductors in the first and second arrays of inductors. (Emphasis added.)

Claim 75 has been amended as shown by the above-underlined language, to emphasize that embodiments of the invention relate to AC coupled electrical connectors. As noted at Page 1, lines 14-15, AC coupled interconnects may be characterized by the absence of a direct current (DC) connection. Accordingly, Claim 75 has been amended to recite that the first and

second mating connector substrates are configured to maintain the first and second mating connector faces in closed spaced apart relation, to prevent DC coupling and to provide inductive AC coupling, between corresponding inductors in the first and second arrays of inductors. Support for this amendment may be found throughout the specification and the drawings.

In sharp contrast, Brady et al. describes DC coupling and does not suggest inductive AC coupling. In particular, Brady et al. provides a component array adapter that includes components therein that are aligned normal to the sides of a substrate. As noted in the Brady et al. Abstract:

Apparatus and methods for connecting a device to an integrated circuit. The apparatus includes an insulating substrate that has two major sides and a number of sites for housing components. Each site has a first node on one of the two sides of the insulating substrate and a second node on the other of the two sides of the insulating substrate. Each site also has components that are aligned normal to the sides of the insulating substrate and are connected to the nodes at the site. Such apparatus are useful as adapters for testing an integrated circuit, such as connecting a test device to the integrated circuit with the adapter and observing and/or driving signals through the adapter.

Brady et al. Figure 1C, which was cited in rejecting Claims 75, 95 and 103, shows two substrates **120** and **120'**, each of which includes inductors **122**, **122'** therein. However, the connection between these inductors **122** and **122'** is a series connection that is effectuated by a solder ball or other electrical connector **124** therebetween. These electrical connectors, such as solder balls, clearly provide a series DC connection between the inductors **122** and **122'**. See for example, Brady et al. Column 5, lines 24-36:

FIG. 1C shows another embodiment where multiple insulating substrates may be used to achieve the advantages described above related to multiple components **150** located at each site. In addition; multiple insulating substrates may be used to connect multiple components **150** in parallel as well as series, or a combination of both. Multiple insulating substrates **120** and **120'** with either single [sic] or multiple components **150** at each site **122** are connected together to create complex circuitry. For one embodiment, the connecting of the multiple insulating substrates **120** and **120'** is in-line **180**, where site **122** for a first insulating substrate **120** is connected to its corresponding site **122** on a second insulating substrate **120**.

Accordingly, Brady et al. describes DC coupling between corresponding inductors in the first and second array of inductors. In contrast, Claim 75 recites preventing DC coupling and providing AC coupling between at least one pair of corresponding inductors in the first and second arrays of inductors. For at least these reasons, Claim 75 is patentable over Brady et

al. Claims 95 and 103 are patentable for at least the same reasons, which will not be repeated for the sake of brevity.

**Many of the Dependent Claims Are Separately Patentable**

Dependent Claims 76-77, 92-94, 96-97, 100-102, 104-105 and 108-110 are patentable at least per the patentability of the independent claims from which they depend. Moreover, the Official Action has concluded that Claims 90, 91, 98, 99, 106 and 107 are independently patentable. Applicants also respectfully submit that dependent Claims 92, 100 and 108 are independently patentable.

In particular, Claim 92 recites:

92. An electrical connector according to Claim 75 further comprising a first mutual inductance coupling element on at least one of the inductors in the first array of inductors and a second mutual inductance coupling element on a corresponding at least one of the inductors in the second array of inductors.

In rejecting Claim 92, the Official Action states at Page 3:

In re claims 92, 100 and 108, Brady et al also teach comprising a first mutual inductance coupling element 314 on at least one of the inductors in the first array of inductors 150 and a second mutual inductance coupling element 324 on a corresponding at least one of the inductors in the second array of inductors (Fig.3).

However, Applicants respectfully submit that elements **314** and **324** of Brady et al. Figure 3 are coupled on opposite sides of a single inductor **350**, so that they are not provided on corresponding inductors in the first and second arrays of inductors. Moreover, the functionality of the electrical connectors **314** and **324** are described in Brady et al. Column 7, lines 23-35:

The interconnect device **100** is connected to the circuit board **360** using electrical connectors **324**. In one embodiment, as shown in FIG. 3, electrical connectors **324** are solder balls. In general, electrical connectors **324** can be any conductive material known to those of skill in the art. Each electrical connector **324** connects a node **326** on the bottom side **340** of the interconnect device **100** to one or more of the signal paths on the circuit board **360**. The interconnect device includes the structure described above in conjunction with FIGS. 1A and 1B. The interconnect device **100** is connected to the BGA socket **310** using electrical contacts **314**, usually standard solder ball connectors, on the BGA socket **310**.

As shown by this passage, a mutual inductance function simply is not provided.

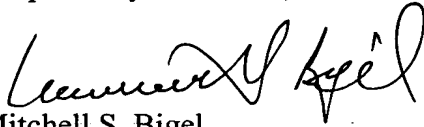
Accordingly, Claim 92 is independently patentable over Brady. Similar analysis applies to Claims 100 and 108. This analysis will not be repeated for the sake of brevity.

In re: Franzon et al.  
Serial No.: 09/997,586  
Filed: November 28, 2001  
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**Conclusion**

Applicants again appreciate the thorough examination and the Examiner's indication that many of the claims would be allowable. In view of the amendments and analysis presented above, Applicants respectfully submit that all of the pending claims are now in condition for allowance, which is respectfully requested.

Respectfully submitted,

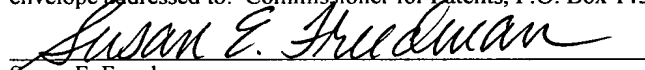
  
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